Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
IP-Enabled Services	)	WC Docket No. 04-36
	)	
E911 Requirements for IP-Enabled Service Providers	)	WC Docket No. 05-196
	)	
	)	

COMMENTS OF SKYPE COMMUNICATIONS, SA

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Dated: August 15, 2005

SUMMARY

The rules adopted by the Commission in the *First Report and Order* ensure that as IP-enabled communications services replace more traditional forms of telephone services, the ability of consumers to reach emergency services by dialing 911 will not be compromised. By limiting the application of E911 requirements to "interconnected" VoIP providers, the Commission recognized that it is premature to apply such requirements to the various types of IP-based communications — such as Skype's SkypeIn and SkypeOut — that do not replace traditional telephone services. However, the *Notice of Proposed Rulemaking*'s tentative conclusion that E911 requirements should be applied to separate offerings that *could* be combined by a user to enable both calls to and from the PSTN threatens to create consumer confusion without providing significant public safety benefits. With respect to Skype's services, very few Skype users subscribe to both the in-bound and out-bound service offerings together. In the few instances in which they do, compliance with E911 requirements currently is not possible, because no automatic location or "I3" solution is available.

While it is of course important to ensure the continued effectiveness of E911 services in an IP-enabled communications environment, the Commission should avoid adopting an interim arrangement that may lead to consumer confusion regarding access to emergency response while diverting precious resources away from the development of a truly effective IP-based solution. Instead, the Commission should support the ongoing efforts of NENA and the VON Coalition to develop a comprehensive next-generation E911 service. In the interim, if the Commission nonetheless believes that some emergency response functionality is necessary for services falling within the

Commission's tentative conclusion, the Commission should consider a call center-based approach similar to that adopted for MSS operators.

Finally, in order to ensure the reliability of VoIP-based E911, the Commission must ensure that network operators will not block VoIP-based E911 traffic.

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Skype Communications, SA ("Skype"), a leader in IP-enabled communications applications, supports the Commission's efforts to promote the continued effectiveness of the nation's 911 and E911 emergency services while remaining committed to allowing IP-enabled services to continue to evolve without undue and burdensome regulation. A pro-innovation regulatory environment contributed to Skype's accelerating growth during the approximately two years since its founding. User enthusiasm has driven Skype's expansion. To the extent Skype has been successful, it is largely attributable to one idea: respect for our users. Conversely, Skype recognizes that if our users are not delighted by their experience, they have a number of alternative ways to satisfy their communications needs. Low barriers to entry in the VOIP market allow competitors to replace Skype quickly.

Skype offers these comments to provide the Commission with additional information about the way Skype users are using our software. To the extent our users develop expectations of emergency calling, we look forward to working with the

Commission to develop technical solutions and reasonable rules that address those expectations.

First and foremost, Skype is a software company. It does not own or control any traditional telecommunications service facilities. Instead, Skype sits atop the applications layer of the network and at the center of a developer community that is delivering innovative, software-defined features that operate as enhancements to traditional voice communications. It is this multinational developer community that spawns many of the features and user interfaces provided by the network transport software that is provided by Skype.

Events in recent years have underscored the importance of a reliable emergency services network that is as ubiquitous as the nation's telecommunications network. The Commission's efforts, along with efforts by federal, state, and local governments and telecommunications service providers, have led to the extensive and reliable 911 and E911 systems that are a vital part of the nation's telecommunications network.

In the *First Report and Order* ("*Order*"),[1] the Commission struck the right balance in adapting the 911 and E911 rules to the IP-enabled voice services world by requiring E911 capabilities of "interconnected" VoIP services, or VoIP services that permit users "to receive calls that originate on the PSTN *and* to terminate calls to the PSTN."[2] The *Notice of Proposed Rulemaking* ("*Notice*"), however, stated the Commission's "tentative conclusion" that such E911 requirements be applied even to separate offerings that "permit[] users . . . [to] combine those separate offerings or . . . use

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[1] *IP-Enabled Services*, WC Docket No. 04-36, *E911 Requirements for IP-Enabled Service Providers*, WC Docket No. 05-196, First Report and Order and Notice of Proposed Rulemaking, FCC 05-116 (rel. June 3, 2005).

[2] *Order* at para. 24.

them simultaneously or in immediate succession."[3]

The Commission's *Order* is consistent with consumer expectations regarding emergency services in that it ensures that a VoIP service that functions as a replacement for traditional telephone service will enable consumers to make 911 calls. The Commission properly recognized that it should proceed with care from this point and not prematurely extend E911 requirements to VoIP services that are not used as replacements for traditional telephone service. Until there is an adequate technical and operational framework to handle emergency response with IP-enabled services, imposition of premature regulatory requirements could lead to consumer confusion by creating unwarranted expectations as to the availability of emergency services, and could disrupt public safety agencies' emergency response for wireline and wireless telecommunications systems. Such premature regulation also could hamper the development of IP-enabled services and delay the future implementation of effective next-generation E911 solutions.

Accordingly, as discussed below, Skype believes that the Commission's tentative conclusion that separate service offerings that can be combined by the user to make calls to and receive calls from the PSTN should be subject to E911 requirements is unwarranted. Rather, the Commission should avoid approaches that could create false expectations among consumers, lead to operational difficulties for public safety entities, and delay VoIP providers in their efforts to create an effective mechanism to provide emergency response services to users of IP-enabled communications. As an interim approach, if deemed necessary, the Commission should consider an O911, or call center-

[3] *Order* at para. 58.

based, emergency response solution, while fostering a framework for a joint public/private effort to achieve a viable and effective E911 solution for IP-enabled services.

I. THE COMMISSION SHOULD NOT REQUIRE E911 CAPABILITIES OF VoIP SERVICES THAT DO NOT ACT AS REPLACEMENTS FOR TRADITIONAL TELEPHONE SERVICE

The Commission has established a test for interconnected VoIP services that serves the broader policy interests of ensuring that consumer expectations for emergency response service continue to be met. Consumer expectations are the touchstone of this approach and should continue to guide the Commission as it moves into this second, technically and operationally more complicated, phase of the proceeding.[4] If a consumer purchases a service that has all the features of "traditional" phone service and that is intended to replace the customer's existing wireline or wireless service, the customer has a reasonable expectation that this replacement service will include the ability to make 911 calls. However, if consumers use computer-based applications for computer-to-computer voice communications and occasional computer-to-telephone or telephone-to-computer communications, they are not likely to use such applications as a replacement for their existing telephone service and are not likely to expect E911 access from such computer-based applications. Any change to these reasonable expectations will create confusion in

[4] Indeed, consumer expectations have long been a determining factor in the Commission's analysis of which services should be subject to E911 requirements. When it first decided which mobile wireless services should implement E911 service, the Commission focused on whether "customers clearly expected access to 911 and E911." *Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, IB Docket No. 99-67, Report and Order and Second Further Notice of Proposed Rulemaking, FCC 03-290, para. 5 (rel. Dec. 1, 2003). *See also Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, RM-8143, Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 18,676, 18,716 (para. 80) (1996) ("[C]ustomers of [cellular] services clearly expect access to 911 and E911, especially because many of them purchase cellular telephones . . . primarily for security.").

the minds of consumers while providing no benefit since users of such IP-based voice applications will be able to use their existing telephone service to call 911.

1. SkypeIn/SkypeOut Subscribers Have No Expectation of E911 Service

In the *Notice*, the Commission tentatively concluded that:

> "a provider of a VoIP service offering that permits users generally to receive calls that originate on the PSTN and separately makes available a different offering that permits users generally to terminate calls to the PSTN should be subject to the rules we adopt in today's Order if a user can combine those separate offerings or can use them simultaneously or in immediate succession."[5]

The same reasons that guided the Commission away from subjecting such separately-provided offerings to E911 rules apply now in the second phase of the proceeding. The Commission must move cautiously to avoid creating consumer expectations of E911 availability for software applications that exist largely on the Internet. The Commission wisely refrained from subjecting more "pure" forms of peer-to-peer communications to E911 requirements, and this reasoning also applies to other IP-enabled communications as to which there is no consumer expectation of E911 availability.[6] The Commission also decided that applications that permit only *one-way* access to the PSTN should not be subject to E911 requirements, as such applications are, by definition, not likely to be viewed as a replacement of "regular" telephone service.[7] Below, Skype reviews the software options that it offers to subscribers and demonstrates that application of E911 requirements will not further the Commission's goal of fostering public safety.

Skype offers two separate software options that permit subscribers to

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[5] *Order* at para. 58.

[6] *See generally Order* at Section III.A (limiting application of E911 requirements to VoIP services that are interconnected to the PSTN).

[7] *Order* at para. 23.

communicate with the PSTN. SkypeOut generally permits subscribers to use a computing device to originate calls to the PSTN for a fee. When a user initiates a SkypeOut session, the call is connected to the PSTN through Skype's carrier partners who are themselves physically interconnected with the PSTN.[8] Subscribers who purchase only SkypeOut cannot receive calls from the PSTN. Skype separately offers a beta version of SkypeIn, an application that allows users to receive calls from the PSTN using traditional numbering resources for a fee. Because they are software-defined and tailored to individual subscriber desires, SkypeIn and SkypeOut are independent of each other. Skype's software applications are priced separately and users subscribe to either or both independently. Only a handful of Skype's subscribers can receive calls from the PSTN because they do not subscribe to SkypeIn.

It is highly unlikely that anyone purchases either Skype application as a replacement telephone service. As discussed above, SkypeOut and SkypeIn were developed and are offered and marketed separately as software applications that are downloaded, rather than phone service that you purchase as part of a retail transaction. A Skype user who separately purchases the ability to make calls to and receive calls from the PSTN also develops a different expectation with respect to 911 access than a subscriber of a VoIP service who cannot separately purchase in-bound and out-bound service. In the latter instance, the VoIP service subscriber is far more likely to view such a "package" service as a replacement for traditional wireline service, and is thereby likely to expect the service to be able to facilitate 911 calls.

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[8] Where a subscriber purchases SkypeOut but not SkypeIN, no numbering resources are used and therefore no ANI is transmitted. Without transmission of ANI information, compliance with existing E911 rules is impossible. *See* 47 C.F.R. § 9.5(a)(2) (requiring interconnected VoIP providers to transmit ANI to the PSAP or other local emergency authority by Nov. 28, 2005).

Skype users must purchase SkypeIn or SkypeOut on a pre-paid basis. The nature of its subscribers and the relationship between Skype and its subscribers, and the fact that Skype gives explicit notice that its software applications will not permit connection to emergency response systems, all directly shape a subscriber's expectation of E911 availability. For example, a Skype subscriber may purchase pre-paid SkypeOut credits in one month, but may lack the ability to make calls to the PSTN the next month. Conversely, a subscriber may purchase the ability to receive calls from the PSTN in one month, but lack the ability to receive calls the next month. A consumer who adjusts her purchases in this way and has not purchased a service that terminates calls to the PSTN is unlikely to have an expectation that he or she can place a 911 call.[9] Each of these scenarios might place combinations of Skype software in, or alternatively out, of the Commission's tentative conclusion for a short period of time depending upon what services the consumer has purchased at that given time.

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[9] Skype's services are differently-positioned in the market and therefore generate different consumer expectations than do services such as CMRS. While CMRS carriers are required to forward all 911 calls to PSAPs regardless of their service-subscription status, *see* 47 C.F.R. 20.18(l), these requirements arose in the context of the unique problems associated with identifying which CMRS users had valid roaming service that enabled them to make calls from a given location. *See Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, RM-8143, Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 18,676, 18,692-97 (paras. 29-42) (1996). The requirements for CMRS carriers continue today as the large growth and popularity of CMRS has led to a consumer expectation that cellular phones are particularly useful in emergency situations. *Cf. Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, RM-8143, Report and Order, FCC 02-120, para. 4 (rel. Apr. 29, 2002) (describing use of non-initialized or unsubscribed cellular phones by victims of domestic violence, the elderly, and the infirm). In contrast, users of software applications such as Skype who have not purchased SkypeOut service are unlikely to rely on or have an expectation to be able to make 911 calls using Skype. *Cf. Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, IB Docket No. 99-67, Report and Order and Second Further Notice of Proposed Rulemaking, FCC 03-290, para. 46 (rel. Dec. 1, 2003) (deciding not to require non-initialized MSS handsets to be able to access 911 and justifying decision by "considering the small numbers of MSS customers, compared to traditional CMRS").

Such a shifting service configuration makes application of the Commission's existing E911 rules very difficult if not impossible, as well as potentially dangerous. For example, subscribers who, at any given time, have purchased SkypeOut but not SkypeIn will not be in a position to generate any ANI call back information for PSAPs to utilize because the service, by definition, does not use traditional numbering resources. More significantly, because Skype's services are pre-paid and require no commitment as to the term of service, consumers may not always be fully aware of their available balances and whether their SkypeIn or SkypeOut services are active at a given time. In such a situation, the consumer should not develop a false expectation that E911 service will be available when in fact it is not possible for the consumer to make calls or transmit ANI call back information to the PSTN. The prospect of consumer confusion is great and the real danger is that Skype's efforts to comply with E911 rules will create a false expectation of E911 availability in its subscribers when they previously, reasonably had none.

In addition, the question of which entity may incur the obligation to provide E911 service is complicated by the fact that voice is merely an application on the Skype transport network. Skype provides an Application Programmers Interface to our software developer community. This permits a developer to replace the Skype user interface with one they develop themselves. This developer could provide service from Washington, D.C., Tallinn, Estonia, or any other city outside the United States. Furthermore, the developer may determine that, for example, he will only make incoming calling facilities available in the program he develops.[10] If the combination of services and applications is

[10] An example of such an application could be a multi-national call center operation. In this

rigidly applied to determine obligations, Skype could be responsible for the actions of software companies or independent developers over which Skype has no control and over which the Commission may lack jurisdiction.

As illustrated above in the discussion of Skype's service offerings, implementing the Commission's tentative conclusion will create ambiguous sub-categories of IP-based applications — sub-categories not driven by consumer expectations — that may be subject to E911 rules, while others will remain outside the requirements.[11] This will only lead to confusion both for consumers and service providers. It would be far better to retain the current "bright line" definition of interconnected VoIP adopted in the *Order*.[12]

2. Skype Subscribers Should Be Permitted To Rely On Existing Wireline and Wireless Systems for Emergency Response.

The Commission has repeatedly recognized that the migration to a broadband infrastructure shifts power away from centralized institutions like incumbent providers and toward consumers.[13] The Commission should respect a consumer's choice to utilize existing E911 service on a traditional wired or wireless network. If the Commission overrides a consumer's choice, it will have replaced its judgment with the judgment of entities that know their broadband needs best — the consumer. If the Commission requires E911 availability for certain Skype subscribers, it will impose significant, unnecessary, and duplicative compliance costs on a nascent industry.

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scenario, the application would offer a NANPA incoming number. The call center may or may not have purchased outgoing calling service.

[11] Skype assumes that the Commission is not considering subjecting Skype to Skype sessions to any of the requirements set forth in the NPRM.

[12] *Order* at para. 24.

[13] *See, e.g.*, *IP-Enabled Services*, WC Docket No. 04-36, Notice of Proposed Rulemaking, FCC 04-28, para. 1 (rel. Mar. 10, 2004) (noting that because of the growth of IP-based networks and services "consumers will become increasingly empowered to customize the services they use, and will choose these services from an unprecedented range of service providers and platforms").

3. Implementation of the Commission's Tentative Conclusion Will Not Provide Significant Public Safety Benefits

Ultimately, regulatory costs are passed on to consumers in the form of higher prices or less innovation. The Commission's tentative conclusion appears to apply to situations in which subscribers combine both SkypeIn and SkypeOut services in close proximity; however, given that a very small percentage of SkypeOut subscribers also subscribe to SkypeIn and can thereby both make and receive PSTN calls, implementing an E911 availability requirement will impose great cost and provide limited public safety benefit. The Commission's analysis should include this cost-benefit consideration.

If compliance costs are high (total I3 implementation cost estimates range into the billions of dollars) and benefits low (*e.g.*, only a small percent of users will conceivably have access to E911 services and experts predict that only 2 percent of E911 calls will originate from VoIP platforms), the Commission should move cautiously to avoid saddling a small number of consumers and providers with significant additional costs and limited benefits. The absence of a significant benefit is all the more true for Skype's users, who are likely to rely on their existing telephone service in the event of an emergency. In this context, premature imposition of E911 requirements will do nothing more than generate a regulatory barrier to entry and will frustrate the Commission's long-standing efforts to remove those barriers and introduce competition to markets traditionally dominated by incumbent carriers.

II. THE COMMISSION SHOULD BE WARY OF ADOPTING AN INTERIM SOLUTION THAT CREATES CONSUMER CONFUSION AND UNREALISTIC EXPECTATIONS AND THAT TAKES NEXT-GENERATION VoIP SERVICE PROVIDERS DOWN THE WRONG PATH

As explained in greater detail below, a comprehensive E911 solution to nomadic

and other next-generation VoIP services is technically and economically unfeasible at the moment. Focusing on an interim or I2 solution in these circumstances will risk customer confusion, create inconsistencies with next generation networks by being backward- rather than forward-looking, and divert resources from the development of a next generation solution. Instead, as discussed in more detail below, the Commission should consider O911, a call center-based emergency response solution, as an interim solution while creating a framework and offering guidance for a public/private approach to a comprehensive next-generation VoIP E911 solution.

1. Applying E911 Requirements to Nomadic VoIP Is Not Technically or Operationally Feasible

Probably the largest single reason for not imposing E911 requirements on nomadic users is that location information for those users is quite simply not available. There exists no database that maps "IP addresses" to physical locations. Indeed the very nature of the Internet has been "location independent." There is much ongoing work to develop possible answers — some of which we detail here — but none are yet close to provisioning a dependable E911 service.

Skype supports the Commission's efforts to balance the interests of the public safety community against its commitment to "allowing [IP] services to evolve without undue regulation in accord with our nation's policies for Internet services."[14] Skype also appreciates the Commission's commitment to preserving the flexibility of VoIP providers to "adopt a technological solution that works best for them."[15] Adopting a technical solution however, presumes that a nomadic E911 system is technically and economically

[14] *Order* at para. 4.
[15] *Order* at para. 5.

available to the industry. For nomadic VoIP services such as Skype's offerings, however, no technically or economically available solutions currently exist to provide reliable, accurate location-based information for emergency responders.

There is significant ongoing work in the service provider community with equipment vendors and in academia to develop a next-generation E911 network. The leading industry proponents of an I3 solution[16] have already identified a number of technical challenges that must be overcome to achieve a truly nomadic solution for E911 services. Skype is proactively working with these experts to develop a software solution to these issues, but we encourage the Commission to evaluate carefully the status of the currently-available technical solutions.

For such a next-generation system to interoperate there are at least four components of a service architecture, all of which must work seamlessly for the entire system to work at all. Service providers must generate updated location information at the edge of the network, interconnected telecommunications carriers must haul that location information to the appropriate location, database managers must validate the information in a format that is useable by public safety officials, and public safety officials must be able to receive that information through upgraded interfaces to dispatch emergency services personnel to validated locations.

Professor Henning Schulzrinne, Chair of the Department of Computer Science at

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[16] The term "I3 solution" refers to the effort of the National Emergency Number Association (NENA), the Voice On the Net (VON) Coalition, and others to develop over the long term a next-generation IP-based E911 solution that fully integrates the advantages of IP-based technology. The earlier stages of VoIP E911 solutions are "I1" solutions, which refer to immediate solutions for 911 calls made over VoIP networks, and "I2" solutions, which refer to migratory or interim solutions that attempt to retrofit a VoIP E911 solution into the existing E911 network without a particular effort to take advantage of IP-based technology to enhance the functionality of emergency response service.

Columbia University, has identified a number of technical challenges that must be met for the successful completion of a next-generation E911 prototype. The evolving technical standards are found in several different organizations and with several different draft requirements documents that are making their way toward acceptance but have yet to achieve consensus.[17] The requirements for PSAP upgrades are likewise general and cash-strapped PSAPs are challenged to find resources necessary to implement IP interfaces.[18] Many of the process flows or prototype solutions rely upon proprietary tools that may or may not be generally available to VoIP providers or PSAPs.[19] Experts actively continue to consider the generation of location information and call steering/routing requirements.[20] Nonetheless, a leading prototype has yet to undergo a comprehensive performance evaluation to ensure that callers using the architecture reach the appropriate PSAP.[21] Once a next-generation system is exposed to the public, particularly for services like Skype that use the public Internet, additional security features must be installed to ensure that the location-based information is trustworthy and that the computers connected to the E911 network at the PSAP and at the end user premises are not susceptible to abuse.

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[17] *See generally* Matthew Mintz-Habib et al., Department of Computer Science, Columbia University, *A VoIP Emergency Services Architecture and Prototype* (hereinafter "Prototype"). *See also* H. Schulzrinne & B. Rosen, *Emergency Services for Internet Telephony Systems*, Draft, (July 2004); B Rosen, *Emergency Call Information in the Domain Name System*, Internet Draft (Feb. 2004).

[18] *See* NENA IP Capable PSAP Features and Capabilities Standard, NENA Std. 58-001 (Feb. 2005).

[19] For example, Columbia University's prototype E911 system, considered by many to offer the most advanced functionality, relies upon mapping tools provided by GeoComm for its GeoLynx Dispatch Mapping Systems. Interconnections and conferencing capabilities are provided by Brooktrout Technology through its Snowshore Media Server, a proprietary technology.

[20] *See* Prototype at 3.

[21] The Prototype identifies system throughput and latency has the primary concern with development of next-generation E911 architecture.

The Commission should consider that, in each of these situations, private companies that have endeavored to develop location solutions for E911 purposes may each develop proprietary databases, service interfaces and methods of delivering location information. Absent a Commission rule or industry endorsed solution, it is unclear at this point how or whether such proprietary solutions will interface with public safety facilities and whether these solutions will be broadly available to VoIP providers. Furthermore, the question of a competitively-neutral cost recovery mechanism to recover the costs of PSAP I3 upgrades has not been established. This underscores the importance of the Commission ensuring that public safety officials can actually receive the IP-based location information generated by an I3 architecture. Without this last link, the investment in creating next-generation functionality will have been stranded.

At the edge of the network, Skype has developed programming interfaces that can form the foundation for a number of industry players to use to deliver location-based information.[22] To date, none offers a ubiquitous, commercially available method of generating location information at the handset or computing device and automatically validating this information against the Master Street Address Guide ("MSAG"). Skype has identified GPS solutions as well, but these have significant limitations including the inability of GPS chips to provide location information while indoors and the lack of GPS functionality in most if not all computing devices that currently exist in the market. Other wireless approaches, such as Wi-Fi triangulation, are intriguing but come with their own unique implementation difficulties such as limited coverage areas and the challenge to generate trusted location information at a level of specificity that the Commission is

[22] *See, e.g.*, Skyhookwireless.com

looking for.

2. Nomadic E911 Solutions for Multi-mode Wireless Devices Are Evolving

The Commission's *Notice* poses a number of interrelated questions that generally seek information on how wireless devices will interoperate with a next-generation E911 system. Specifically, the Commission asked: "How should the use of wireless broadband connections such as Wi-Fi or WiMax impact the applicability of the obligations we adopt today? Would providers of wireless interconnected VoIP service be more appropriately subject to our existing 911/E911 rules for CMRS?"[23]

As mobile computing devices proliferate, more VoIP services will migrate to these platforms. Wireless "interconnected VoIP services" however may arrive in the market in various forms. Specifically, handsets may include only Wi-Fi or WiMax connection support, or these handsets may include such functionality in addition to a connection to a wireless network such as a GSM network ("dual mode").

Where a wireless interconnected VoIP provider offers a dual mode device, the Commission should make clear that this offering complies with the Commission's existing 911/E911 rules for CMRS carriers through the use of the CMRS E911 functionality built into the phone. Thus, if a consumer dials 911 on a dual mode device, the call is routed through the CMRS network to the appropriate PSAP who uses the CMRS carrier-generated location information to dispatch emergency services to the location of the caller. In this scenario, customer expectations are met through use of the existing CMRS E911 service and public safety officials are provided with all necessary information through that underlying network.

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[23] *Order* at para. 59.

Given the Commission's build-out requirements imposed on CMRS carriers as well as marketplace realities, CMRS networks are significantly more extensively deployed than Wi-Fi or WiMax networks. Accordingly, the public safety interests at issue are more effectively met through use of CMRS-based E911 rules. The Commission's rules, service provider expectations, and the technical and timing steps to meet these requirements are already established.[24] It would serve no purpose to impose an additional E911 requirement on the Wi-Fi or WiMax feature of the device when customer expectations are fully met with the CMRS E911 functionality.[25] Therefore, the Commission should make clear that a wireless interconnected VoIP provider may comply with the Commission's rules when it offers a dual mode device that provides consumers access to emergency services through a connected CMRS network.

As discussed above, Skype is an applications-layer provider — it provides a software program that, in effect, rests atop the access layer facilities provided by a broadband service provider. Where the access layer — in this case, the facilities provided by a CMRS carrier — enables customers to access emergency services, there is simply no need to add additional regulatory requirements on applications-layer providers.

A more complicated scenario is presented by a situation in which a mobile device does not include CMRS connection support but does provide a VoIP connection through the use of unlicensed spectrum technologies. As discussed above, because there is no

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[24] Under rule 20.18 PSAPs that are capable of receiving and utilizing E911 data elements can request that wireless carriers offer Phase I or Phase II E911 service; thereafter the wireless carrier has six months in which to implement the request. See 47 C.F.R. § 20.18(d), (e), (j).

[25] The fact that Congress has recognized the importance of 911 service on the CMRS platform by providing to CMRS carriers statutory immunity from liability in the course of their provision of 911 service illustrates the relative maturity of CMRS-based E911. *See* 47 C.F.R. § 615(a). *See also* Petition of T-Mobile USA, Inc for Clarification, WC Docket No. 04-36; WC Docket No. 05-196 (filed July 29, 2005).

technically or economically feasible method of providing accurate location information to PSAPs for these unlicensed devices, the Commission should defer imposing E911 requirements on service providers introducing these innovative devices until an I3 solution is technically and economically available.

3. Appropriate Rules Should Be Established for New Types of Products or Services

In order to guarantee that an I3 solution is properly tested and to ensure that innovative products and services continue to reach American consumers, Skype must retain some flexibility to conduct technical and commercial "trials" of new products. These trial efforts would be offered to very limited numbers of consumers in the United States and would, of course, include disclaimers of emergency calling functions.[26] Without such a "safe harbor" test bed, innovative products will be driven to jurisdictions with a more open regulatory environment. Thus, Skype suggests that the Commission establish a minimum scale requirement that should apply to operations before emergency service rules should apply at all.[27]

4. Implementation of the Commission's Tentative Conclusion Could Create Complications for Public Safety Agencies

Bad location information is worse than no location information. Skype and its partners will do everything in our power to deliver accurate location information if the FCC so requires. However, if the Commission requires a nomadic solution before one is

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[26] Skype expects trial products could include such things as embedded computing devices or new service configurations of a very limited scope.

[27] The Commission has provided a greater degree of regulatory flexibility in the past for promotional or "trial" offers, particularly when relatively small numbers of subscribers or products are involved. Most notably, the Commission has offered such flexibility to incumbent LECs. *See generally* 47 C.F.R. § 61.39 (offering tariff flexibility to LECs serving below a certain number of access lines); 47 C.F.R. § 2.803(e) (permitting operation of devices prior to equipment authorization at demonstrations, trade shows, etc.).

technically feasible, PSAPs may be adversely affected and public trust in the E911 system will be undermined. An I3 solution must be rigorously tested before the Commission demands its implementation. However, the complexity of an I3 solution should not be underestimated. Whenever large, complicated projects such as these are implemented, unforeseen technical issues invariably arrive. To the extent the Commission orders an I3 solution prematurely without such rigorous testing, the potential for erroneous dispatches is great. PSAPs who dispatch emergency services personnel to the wrong location will incur costs without associated public safety benefits. Doing so will not serve the Commission's broader goal of protecting life and property.

It also bears emphasizing that the devices connected to an I3 emergency services network will be computing devices that are IP-capable and networked. Despite Skype's best efforts, networked devices will be subject to the same hacker threats on the Internet as computers. Specifically, connected devices are susceptible to denial of service attacks that could have devastating consequences for PSAPs. It is not inconceivable that malicious code could take over a connected device to generate millions of E911 messages to PSAPs creating a denial of service attack. Flooding all 6600 PSAPs with unanswerable communications will make it impossible for PSAPs to respond to callers who are genuinely distressed.

PSAPs are the most critical link in our emergency response network particularly in times of national emergency or terrorist attack. The Commission should ensure that all of the relevant technical and security issues have been addressed by industry before requiring nomadic E911 service. Failure to do so would create a serious threat to the general availability of emergency services that Americans currently enjoy.

5. The Commission Can Have Confidence That the Efforts of NENA And The VON Coalition Will Achieve A Workable E911 Solution for Next-Generation VoIP Services

As the discussion above indicates, significant technical challenges remain before an effective E911 solution can be achieved for next-generation VoIP services. Adopting an interim, stop-gap solution poses several dangers as discussed above, and would only distract from the creation of a forward-looking E911 solution by diverting resources to backward-looking, temporary fixes. Instead, the Commission should support the public/private efforts spearheaded by NENA[28] and the VON Coalition to achieve an E911 solution for next-generation VoIP services, fostering a framework for such an effort and guiding implementation as necessary.[29]

Skype supports and applauds the standards development championed by NENA and the VON Coalition. In particular, Skype encourages the Commission to ensure that whatever technical solutions are produced by this process, they are forward-compatible and provide a truly next-generation solution to the emergency services challenges the industry currently faces.

Skype is committed to adoption of an emergency calling system that is not voice-centric, is more efficient, less costly and more capable than the current system. For example, next-generation emergency response systems should allow a person in distress to communicate with emergency personnel via text message to avoid further danger and should provide emergency responders with video information of a crime scene or enable

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[28] NENA, the National Emergency Number Association, is a non-for-profit corporation whose mission is to extend and improve E911 calling. *See* www.nena.org.

[29] VON and NENA are not alone in addressing this issue. Congress is actively engaged and has already taken important steps to enable VoIP innovation and investment in IP technologies. In particular, Congress is currently considering the IP-Enabled Voice Communications and Public Safety Act of 2005. *See* H.R. 2418, 109th Cong. (2005) and S. 1063, 109th Cong (2005).

them to offer instruction on the proper use of CPR.[30]

Consumers who use VoIP services are not limited by geographic boundaries and neither should the emergency services network they access. As more and more VoIP subscribes use their services across national boundaries, regulators around the world must think about an emergency-calling network that is global in scope. As a global provider, Skype is committed to ensuring that emergency services requirements, to the extent applicable, are harmonized across jurisdictions. Without some level of international coordination, VoIP providers could be subject to a myriad of different, possibly conflicting, emergency services requirements and consumers will be confused. Already, domestic US subscribers are moving terminal adapters to foreign broadband systems, creating the conditions for dispatching a US emergency responder to a subscriber in need of assistance in London.

Before adopting additional requirements, the Commission should coordinate its efforts with the work of other national regulators to ensure that user expectations are met wherever a global VoIP subscriber may wander. Through organizations like the Global IP Alliance, the Commission's work and experiences can be amplified and communicated across national jurisdictions. While such a globally-integrated approach is perhaps not in the immediate future, Skype is working in various industry and government fora to develop an emergency service infrastructure that is IP-based and flexible enough to work across national boundaries.

[30] It is not fanciful to think about text-based communications to PSAPs particularly if those communications are validated and offer the person in distress an added degree of protection from harm.

6. Skype Proposes a Solution Framework

Fortunately, the Commission has some experience working with nascent industries to deliver E911 functionality. Given the complexities of the solution and the requirement that PSAPs upgrade their facilities, the FCC should pattern its next-generation E911 rules according to a phased deployment schedule like the one adopted by the FCC for the nascent CMRS industry.[31]

In the interim, while the Commission works with industry and public safety officials, the Commission should consider defer imposing any additional requirements on any IP-enabled communications application, such as Skype, as to which consumers do not have an expectation of emergency calling. If the Commission nonetheless chooses to do so, it should allow any newly subjected services not already defined as interconnected VoIP services to adopt, as an interim compliance solution, call-center operated emergency services ("O911"). This approach is not unprecedented. The Commission wisely allowed another nascent service to develop interim emergency service functions

[31] In establishing a phased E911 deployment schedule for the CMRS industry, the Commission recognized the technical complexity of the task involved and the need not to overly burden a nascent industry. The Commission first adopted an order requiring CMRS providers to implement E911 service in June, 1996. *Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, RM-8143, Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 18,676 (1996). However, under the phased deployment schedule, Phase I implementation, which required carriers to transmit a call-back number and cell site location to the appropriate PSAP, did not begin until April 1, 1998 — almost two years later — while Phase II implementation, which required carriers to transmit a caller's location to the appropriate PSAP, did not begin until October 1, 2001 — more than five years later. *See* 47 C.F.R. § 20.18(d), (e), (h). Moreover, Phase II of the CMRS E911 deployment schedule itself calls for a phased deployment, one which continues today and which is far from being complete. *See Verizon Wireless Strives To Meet FCC's 95% E-911 Deadline: At 88% Penetration*, Comm. Daily, Aug. 4, 2005, at 4-5 (noting that several major wireless carriers intend to ask the Commission for extensions of the Dec. 31, 2005 deadline); *Wireless Carriers to Fall Short of Meeting FCC E-911 Deadline*, Comm. Daily, Aug. 2, 2005, at 2-3 (same). The E911 deployment schedule for CMRS, now into its 10th year, is in stark contrast to the 120-day schedule for interconnected VoIP providers established in the *Order*.

and it should do so here.[32] O911 service providers have developed proven, reliable solutions for emergency service calls. Through a series of database checks and warm transfers to PSAPs, they have increased the likelihood that the appropriate emergency personnel will be dispatched in a timely manner. By staying on the line and enabling a transfer to the appropriate PSAP, an O911 solution mitigates the possibility that a PSAP will receive bad location information. O911 solutions are not perfect; but they should form the basis for an E911 safeguard while the Commission and industry work out a longer-term solution for nomadic and other next-generation E911 services.

III. THE COMMISSION MUST ENSURE THAT NETWORK OPERATORS WILL NOT BLOCK E911 TRAFFIC

Skype is gratified by the Commission's recent endorsement of a consumer-empowering set of connectivity principles.[33] This action creates an appropriate policy framework for this issue as consumers and network operators migrate toward a broadband infrastructure. Consumer protection is, of course, at the center of the instant proceeding and the relationship between the goals described in the Policy Statement and this proceeding is a close one.

As emphasized above, Skype is committed to working through the NENA/VON I1-I3 process to develop a technical solution that is economically reasonable. The prospect of access providers blocking VoIP traffic in general and E911 VoIP traffic in particular, however, will seriously undermine the Commission's efforts to develop an I3

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[32] *See Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, CC Docket No. 94-102, IB Docket No. 99-67, Report and Order and Second Further Notice of Proposed Rulemaking, FCC 03-290, paras. 21-35 (rel. Dec. 1, 2003) (requiring all interconnected MSS licensees to route all 911 calls to national call centers); *id.* at para. 21 (discussing the use of emergency call centers by MSV and Globalstar).

[33] *See* News Release, *FCC Adopts Policy Statement, New Principles Preserve and Promote the Open and Interconnected Nature of Public Internet*, Aug. 5, 2005*; see also* News Release, *Chairman Kevin J. Martin Comments on Commission Policy Statement*, Aug. 5, 2005.

solution and protect public safety.

This concern is not speculative. In the one relevant case identified by the Commission's Enforcement Bureau, an access provider frustrated the ability of its DSL subscriber to access VoIP services generally, but it also made it impossible for the subscriber — who was using the service as its primary communications tool — to call emergency personnel if needed.[34] Internationally, Skype is aware of several instances in which incumbent providers have specifically targeted Skype service.[35] Port blocking affects not only voice communications generally, but also emergency communications specifically. It cannot serve the Commission's broader public safety responsibilities to disconnect or otherwise frustrate the ability of consumers to have the broadest access to E911 services available. To that end, the Commission should make clear that network operators who fail to adhere to the Commission's policy statement and who frustrate the ability of a VoIP consumer to place or receive calls will be subject to the full panoply of enforcement tools available to the Commission. To protect public safety fully and hasten the development of an effective next-generation E911 solution, the FCC should institute an enforcement program to deter network operators from blocking VoIP service.

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[34] *Madison River Communications, LLC and Affiliated Companies*, File No. EB-05-IH-0110, Order and Consent Decree, DA 05-543 (rel. Mar. 3, 2005). In this instance, Madison River, an ISP, blocked the ports of Vonage and other VoIP providers. Following an Enforcement Bureau investigation, Madison River entered into a consent decree which required it to pay a fine and cease blocking ports used for VoIP applications.

[35] In Germany, Vodafone has announced that it intends to block VoIP from Skype and others over its network. *See* Ben Charny, *VoIP Backlash in Germany?*, CNET News.com, July 13, 2005, *available at* http://news.zdnet.com/2100-1035_22-5786976.html. Meanwhile, in the United Arab Emirates, the government had apparently decided to protect its telephone service monopoly by blocking access to Skype. *See Caught In The Net: Skype*, Foreign Policy, July 1, 2005, at 92.

IV. VoIP SERVICES THAT DO NOT REQUIRE A BROADBAND CONNECTION SHOULD NOT BE SUBJECT TO E911 REQUIREMENTS

In the *Notice*, the Commission asks whether it should extend E911 obligations to "IP-based voice services that do not require a broadband connection."[36] The Commission should not extend E911 obligations to such services. As the Commission noted in its *Order*, "most VoIP services will be used over a broadband connection."[37] VoIP services that do not require a broadband connection are unlikely to be used as replacement telephone service, and as the Commission has recognized and as discussed above, E911 requirements should only be applied to those VoIP services that act as replacement telephone services. Moreover, and more significantly, VoIP services that operate over a dialup connection do so in an environment where, by definition, a wireline telephone connection exists. Imposing an E911 requirement on VoIP services in such circumstances will only lead to consumer confusion while offering no cognizable advantage.

V. SUMMARY AND CONCLUSION

Skype fully supports the Commission's efforts to preserve and protect public safety — particularly for those users who use VoIP services as a replacement for telephony services. In various ways, Skype makes it clear that its software is not a replacement for traditional telephone service and its subscribers accept it as such. Throughout the user experience, subscribers are warned explicitly that Skype software applications are not a substitute for traditional telephony and that emergency services will not be available to subscribers for any Skype applications, free or paid. Skype

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36 *Order* at para. 58.

37 *Order* at para. 24 n.76.

subscribers can be transitory and typically use the service as an enhancement to their Internet experience in addition to wireless or wireline telephony services from traditional telephone providers.

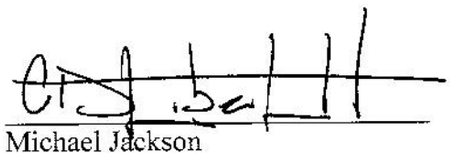
Skype is concerned that premature implementation of emergency service requirements will delay the day when consumers will enjoy a more capable emergency services network. Effort and resources spent now on an inappropriate interim solution are efforts and resources not spent developing a next-generation emergency services solution. The NENA/VON process to develop an "I3" or nomadic solution is perhaps the best hope of achieving a quantum leap in emergency services functionality.

* * *

IP-enabled services hold tremendous promise to enhance our existing emergency services networks. As a leader in software-defined communications applications, Skype is committed to working proactively in this process, internationalizing the solution, and working toward an E911 system that improves the outstanding level of protection public safety officials provide today. The technology is coming for E911 solutions; the FCC should work toward creating the conditions for a next-generation E911 service and should be wary about imposing interim solutions that divert valuable resources away from developing an E911 system that offers a quantum leap in emergency response functionality.

Respectfully submitted,

SKYPE COMMUNICATIONS, SA



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Dated: August 15, 2005